ASSIGNMENT AND PRELIMINARY ANALYSIS OF THE IR ABSORPTION SPECTRUM OF CH_3D IN THE REGION 1900-3200 CM^{-1}

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The infrared spectra of CH_3D in the region 1900-3200 cm^{-1} has been investigated using high-resolution Fourier spectra recorded at Kitt Peak. This region includes the nine interacting vibrational bands: $\nu_1(A_1)$, $\nu_2(A_1)$, $\nu_4(E)$, $2\nu_3(A_1)$, $2\nu_5(A_1+E)$, $2\nu_6(A_1+E)$, $\nu_3+\nu_5(E)$, $\nu_3+\nu_6(E)$ and $\nu_5+\nu_6(A_1+A_2+E)$.

Starting from assignments available in HITRAN, the analysis process could be initiated leading on turn to an extented assignment of the new spectra involving all vibrational bands. However in the present stage, due to problems encountered with two of the bands, the fit was limited to small values of J.

The investigation of such a complex polyad (so-called Nonad) required to develop an appropriate model based on the tensorial formalism allowing a coherent description of the. successive polyads of the molecule. The Hamiltonian was expressed as a sum of terms relating directly to the subsequent Polyads: Ground State, Triad and Nonad. Doing so, the effects of the rovibrational interactions taking place in the Triad system (1) are consistently extrapolated into the Nonad system. Theoretical details including relationships between our parameters and classical parametres are described elsewhere (2).

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(1) G.Tarrago, M.Delaveau, L.Fusina and G. Guelachvili, J. Mol. Spectrosc. 126, 149 (1987).
(2) A.Nikitin, J.P. Champion, and Vl.G.Tyuterev (Poster Dijon 1995).